

MATHEMATICS CROSSWALK
2008 MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 8

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL				
Strand 1: Number and Operations				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Number Sense	1	Compare and order real numbers including very large and small integers, and decimals and fractions close to zero.	1	Locate rational numbers on a number line.
	2	Classify real numbers as rational or irrational.	2	Identify irrational numbers.
			3	Classify real numbers as rational or irrational.
	3	Model the relationship between the subsets of the real number system.	M07-S1C1-08	Classify rational numbers as natural, whole, or integers.
	4	Model and solve problems involving absolute value.	M08-S1C2-01	Select the grade-level appropriate operation to solve word problems.
2. Numerical Operations			M08-S1C2-02	Solve word problems using grade-level appropriate operations and numbers.
	1	Solve problems with factors, multiples, divisibility or remainders, prime numbers, and composite numbers.	1	Select the grade-level appropriate operation to solve word problems.
			2	Solve word problems using grade-level appropriate operations and numbers.
	2	*Describe the effect of multiplying and dividing a rational number by <ul style="list-style-type: none"> • a number less than zero, • a number between zero and one, • one, and • a number greater than one.* 		
	3	Solve problems involving percent increase, percent decrease, and simple interest rates.	9	Calculate the missing value in a percentage problem.
	4	Convert standard notation to scientific notation and vice versa (include positive and negative exponents).	10	Convert standard notation to scientific notation, and vice versa.

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Strand 1: Number and Operations				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
2. Numerical Operations	5	Simplify numerical expressions using the order of operations that include grouping symbols, square roots, cube roots, absolute values, and positive exponents.	3	Determine the square of an integer.
			4	Determine the square root of an integer.
			5	Identify squaring and finding square roots as inverse operations.
			7	Apply the symbols " $\sqrt{}$ " to represent square root, " \pm " to represent roots, and " $\{\}$ " as grouping symbols.
			11	Simplify numerical expressions using the order of operations with grade appropriate operations on number sets.
	M08-S3C3-03	Moved to Strand 3 Concept 3	6	Apply grade-level appropriate properties to assist in computation.
		REMOVED (This skill is required throughout the standard.)	8	Use grade-level appropriate mathematical terminology.
3. Estimation	1	Make estimates appropriate to a given situation.	1	Solve grade-level appropriate problems using estimation.
			2	Use estimation to verify the reasonableness of a calculation (e.g., Is 32 the square root of 64?).
			3	Express answers to the appropriate place or degree of precision (e.g., time, money).
			4	Verify the reasonableness of estimates made from calculator results within a contextual situation.
			MHS-S1C3-01	Solve grade-level appropriate problems using estimation.
	2	Estimate the location of rational and common irrational numbers on a number line.	M08-S1C1-01	Locate rational numbers on a number line.
			M08-S1C1-02	Identify irrational numbers.

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Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Data Analysis (Statistics)	1	Solve problems by selecting, constructing, interpreting, and calculating with displays of data, including box and whisker plots and scatterplots.	2	Construct box-and-whisker plots.
			3	Determine the appropriate type of graphical display for a given data set.
			4	Interpret box-and-whisker plots, circle graphs, and scatter plots.
			5	Answer questions based on box-and-whisker plots, circle graphs, and scatter plots.
			7	Formulate reasonable predictions based on a given set of data.
			9	Solve contextual problems using scatter plots, box-and-whiskers plots, and double line graphs of continuous data.
			11	Identify a line of best fit for a scatter plot.
	2	Make inferences by comparing the same summary statistic for two or more data sets.	6	Solve problems in contextual situations using the mean, median, mode, and range of a given data set.
			8	Compare trends in data related to the same investigation.
			11	Identify a line of best fit for a scatter plot.
	3	Describe how summary statistics relate to the shape of the distribution.	6	Solve problems in contextual situations using the mean, median, mode, and range of a given data set.
	4	Determine whether information is represented effectively and appropriately given a graph or a set of data by identifying sources of bias and compare and contrast the effectiveness of different representations of data.	3	Determine the appropriate type of graphical display for a given data set.
			MHS-S2C1-17	Identify differences between biased and unbiased samples.
	5	*Evaluate the design of an experiment.*		
		REMOVED	1	Formulate questions to collect data in contextual situations.

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Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Data Analysis (Statistics)		REMOVED	10	Evaluate the effects of missing or incorrect data on the results of an investigation (e.g., Susie's teacher recorded a 39 instead of a 93 for her last quiz, what will happen to Susie's average?).
	MCWR-S2C1-07	Moved to College Work Readiness	12	Distinguish between causation and correlation.
2. Probability	1	Determine theoretical and experimental conditional probabilities in compound probability experiments.	1	Determine the probability that a specific event will occur in a 2-stage probability experiment.
			3	Predict the outcome of a grade-level appropriate probability experiment.
	2	Interpret probabilities within a given context and compare the outcome of an experiment to predictions made prior to performing the experiment.	2	Solve contextual situations using probability (e.g., If the probability of Michelle making a free throw is 0.25, what is the probability that she will make three free throws in a row?).
			4	Record the data from performing a grade-level appropriate probability experiment.
			5	Compare the outcome of an experiment to predictions made prior to performing the experiment.
			7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.
	3	Use all possible outcomes (sample space) to determine the probability of dependent and independent events.	6	Distinguish between independent and dependent events.

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Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
3. Systematic Listing and Counting	1	Represent, analyze, and solve counting problems with or without ordering and repetitions.	1	Determine all possible outcomes involving the combination of two or more sets of objects (e.g., If you roll a six-sided number cube 4 times, how many possible outcomes are possible?).
			2	Determine all possible arrangements given a set (e.g., How many ways can you arrange a set of 7 books on a shelf?).
	2	*Solve counting problems and represent counting principles algebraically including factorial notation.*		
4. Vertex-Edge Graphs	1	*Use directed graphs to solve problems. *		
	M07-S2C4-01	Moved to Grade 7	1	Solve contextual problems represented by vertex-edge graphs.

Strand 3: Patterns, Algebra, and Functions				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Patterns	1	Recognize, describe, create, and analyze numerical and geometric sequences using tables, graphs, words, or symbols; make conjectures about these sequences.	1	Communicate a grade-level appropriate iterative or recursive pattern, using symbols or numbers.
			2	Extend a grade-level appropriate iterative or recursive pattern.
			3	Solve grade-level appropriate iterative or recursive pattern problems.
2. Functions and Relationships	1	Sketch and interpret a graph that models a given context; describe a context that is modeled by a given graph.	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).
			3	Determine whether a graph or table is related to a given equation of the form $y=ax^2$ where 'a' is a natural number.
	2	Determine if a relationship represented by a graph or table is a function.	MHS-S3C2-01	Determine if a relationship is a function, given a graph table, or set of ordered pairs.
2. Functions and	3	Write the rule for a simple function using	4	Identify independent and dependent variables for

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Strand 3: Patterns, Algebra, and Functions				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
Relationships		algebraic notation.		a contextual situation.
			M07-S3C2-01	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).
	4	Identify functions as linear or nonlinear and contrast distinguishing properties of functions using equations, graphs, or tables.	2	Distinguish between linear and nonlinear functions, given graphic examples.
	5	*Demonstrate that proportional relationships are linear using equations, graphs, or tables.*		
3. Algebraic Representations	1	Write or identify algebraic expressions, equations, or inequalities that represent a situation.	2	Use variables in contextual situations.
			5	Translate a contextual situation into an algebraic inequality (e.g., Joe earns more than \$5.00 an hour; therefore, $x > 5$).
			6	Identify an equation or inequality that represents a contextual situation.
	2	Evaluate an expression containing variables by substituting rational numbers for the variables.	1	Evaluate algebraic expressions by substituting rational values for variables [e.g., $2(ab+ac+bc)$, when $a = 2$, $b = 3/5$, and $c = 4$].
3. Algebraic Representations	3	Analyze situations, simplify, and solve problems involving linear equations and inequalities using the properties of the real number system.	7	Solve one-step equations with rational numbers as coefficients or as solutions.
			8	Solve one-step equations that model contextual situations.
			9	Solve two-step equations with rational coefficients and integer solutions (e.g., $3x + 5 = 11$, $4x - 20 = 8$).
			M08-S1C2-06	Apply grade-level appropriate properties to assist in computation.
			11	Solve a simple algebraic proportion.
	4	Translate between different representations of linear equations using	3	Translate a written sentence or phrase into an algebraic equation or expression, and vice versa (e.g., Three less than twice a number is $2n-3$).

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Strand 3: Patterns, Algebra, and Functions				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
		symbols, graphs, tables, or written descriptions.	4	Translate a sentence written in context into an algebraic equation involving two operations.
			M08-S4C3-01	Use a table of values to graph a linear equation.
	5	Graph an inequality on a number line.	10	Graph an inequality on a number line.
	M08-S4C4-02	Moved to Strand 4 Concept 4	11	Solve a simple algebraic proportion.
	M08-S4C3-02	Moved to Strand 4 Concept 3	12	Solve applied problems using the Pythagorean theorem.
4. Analysis of Change	1	Interpret the relationship between a linear equation and its graph, identifying and computing slope and intercepts.	1	Identify the slope of a line as the rate of change (the ratio of rise over run).
			MHS-S3C4-01	Determine slope, x-, and y-intercepts of a linear equation.
	2	Solve problems involving simple rates.	M08-S5C1-01	Describe how to use a proportion to solve a problem in context.

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Strand 4: Geometry and Measurement				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Geometric Properties	1	Identify the attributes of circles: radius, diameter, chords, tangents, secants, inscribed angles, central angles, intercepted arcs, circumference, and area.	7	Recognize the relationship between inscribed angles and intercepted arcs.
			8	Identify tangents and secants of a circle.
	2	*Predict results of combining, subdividing, and changing shapes of plane figures and solids.*		
	3	Use proportional reasoning to determine congruence and similarity of triangles.	1	Draw a model that demonstrates basic geometric relationships such as parallelism, perpendicularity, similarity/proportionality, and congruence.
			10	Identify corresponding angles of similar polygons as congruent and sides as proportional.
			M08-S4C4-06	Solve problems using ratios and proportions, given the scale factor.
			M08-S4C4-07	Calculate the length of a side, given two similar triangles.
	4	*Use the Pythagorean Theorem to solve problems.*		
	M07-S4C1-03	Moved to Grade 7	1	Draw a model that demonstrates basic geometric relationships such as parallelism, perpendicularity, similarity/proportionality, and congruence.
			2	Draw 3-dimensional figures by applying properties of each (e.g., parallelism, perpendicularity, congruency).
	M04-S4C1-07	Moved to Grade 4	3	Recognize the 3-dimensional figure represented by a net.
	M07-S4C4-05	Moved to Grade 7	4	Represent the surface area of rectangular prisms and cylinders as the area of their net.
	M05-S4C1-01	Moved to Grade 5	5	Draw regular polygons with appropriate labels.

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Strand 4: Geometry and Measurement				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Geometric Properties	M07-S4C1-02	Moved to Grade 7	6	Identify the properties of angles created by a transversal intersecting two parallel lines (e.g., corresponding angles are congruent).
	MHS-S4C1-09	Moved to High School	9	Determine whether three given lengths can form a triangle.
2. Transformation of Shapes	1	Model the result of rotations in multiples of 45 degrees of a 2-dimensional figure about the origin.	2	Model a simple transformation on a coordinate grid (e.g., Translate right four units and down two units.).
	2	Describe the transformations that create a given tessellation.	M04-S4C2-02	Identify a tessellation.
			M05-S4C2-02	Describe the transformations that created a tessellation.
			M06-S4C2-02	Perform elementary transformations to create a tessellation.
	3	*Identify lines of symmetry in plane figures or classify types of symmetries of 2-dimensional figures.*		
	M06-S4C2-01	Moved to Grade 6	1	Identify the planar geometric figure that is the result of a given rigid transformation.
3. Coordinate Geometry	1	Make and test a conjecture about how to find the midpoint between any two points in the coordinate plane.	2	Determine the midpoint given two points on a number line.
	2	Use the Pythagorean Theorem to find the distance between two points in the coordinate plane.	3	Determine the distance between two points on a number line.
			M08-S3C3-12	Solve applied problems using the Pythagorean theorem.
	M08-S3C3-04	Moved to Strand 3 Concept 3	1	Use a table of values to graph a linear equation.
4. Measurement	1	*Solve problems involving conversions within the same measurement system.*		

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Strand 4: Geometry and Measurement				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
4. Measurement	2	Solve geometric problems using ratios and proportions.	6	Solve problems using ratios and proportions, given the scale factor.
			7	Calculate the length of a side, given two similar triangles.
			M08-S5C1-01	Describe how to use a proportion to solve a problem in context.
			M08-S3C3-11	Solve a simple algebraic proportion.
	3	Calculate the surface area and volume of rectangular prisms, right triangular prisms, and cylinders.	2	Solve problems involving the volume of rectangular prisms and cylinders.
			3	Calculate the surface area of rectangular prisms or cylinders.
			4	Identify rectangular prisms and cylinders having the same volume.
	M06-S4C4-05	Moved to Grade 6	1	Solve problems for the area of a trapezoid.
	MHS-S4C1-06	Moved to Grade HS	5	Find the measure of a missing interior angle in a triangle or quadrilateral.

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Strand 5: Structure and Logic				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
1. Algorithms and Algorithmic Thinking	1	Create an algorithm to solve problems involving indirect measurements, using proportional reasoning, dimensional analysis, and the concepts of density and rate.	1	Describe how to use a proportion to solve a problem in context.
			M08-S4C4-06	Solve problems using ratios and proportions, given the scale factor.
	M06-S5C1-01	Moved to Grade 6	2	Analyze algorithms.
2. Logic, Reasoning, Problem Solving, and Proof	1	*Analyze a problem situation to determine the question(s) to be answered.*		
	2	*Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.*		
	3	*Identify relevant, missing, and extraneous information related to the solution to a problem.*		
	4	*Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.*	3	Model a contextual situation using a flow chart.
	5	*Apply a previously used problem-solving strategy in a new context.*		
	6	*Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.*		

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Strand 5: Structure and Logic				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
2. Logic, Reasoning, Problem Solving, and Proof	7	*Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.*		
	8	Describe when to use proportional reasoning to solve a problem.	M08-S5C1-01	Describe how to use a proportion to solve a problem in context.
	9	*Make and test conjectures based on information collected from explorations and experiments.*		
	10	Solve logic problems involving multiple variables, conditional statements, conjectures, and negation using words, charts, and pictures.	1	Solve a logic problem given the necessary information.
	11	Identify simple valid arguments using if... then statements.	2	Identify simple valid arguments using if...then statements (e.g., All squares are rectangles. If quadrilateral ABCD is a rectangle, is it a square?).
	12	*Make, validate, and justify conclusions and generalizations about linear relationships.*		
	13	Verify the Pythagorean Theorem using a valid argument.	4	Verify the Pythagorean theorem using an area dissection argument.

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